

Indian Rose Annual - IRA 2003

ROSE BREEDING FOR WARM CLIMATES

M. S. Viraraghavan

(This is the text of the talk given at the WFRS Regional Rose Convention,
Capetown, South Africa, 28th Oct – 2nd Nov 2002)

A few words on the case for a separate line of breeding for warm climates would be appropriate. In fact, the need for such a line was brought home to me in a somewhat painful manner during the recent severe drought in my farm where I test out my new roses. This farm has a warm dry climate. When the water supply failed and could not be restored for over a fortnight nearly 50% of the hybrid teas died, whereas all the Tea roses survived.

All of us are proud that the rose is considered the world's favourite flower. But unfortunately the world we have in mind does not include vast areas of the tropics as well as considerable parts of the warmer sub-tropics where modern roses can only be grown by enthusiasts. You go to a garden loving state like Singapore where there are hundreds of ornamental plants immaculately grown – there is not a single rose there.

Rose growing with modern roses, even in the warmer parts of the sub-tropics is full of problems. Very few, if any, H.T.'s will thrive in Bermuda. In India roses become very difficult to grow in the warm moist coastal areas and even in the more favourable conditions in North India and the central plateau, the European raised roses rarely do well. It is mostly the Americans, especially the older AARS winners, which have been evaluated over a range of climates which succeed. The position is much the same in the warmer parts of the U.S. and Australia and, I'm sure, Africa. For South Africa, a clear pointer is the fact that it is mainly roses raised for greenhouse cultivation in Europe by Kordes which are found suitable for outdoor growing by your own Ludwig Taschner.

Even commercial rose growing for the floriculture industry has similar problems. Standard cut-flower varieties raised in temperate climates have less than optimum yield and flower quality in the higher temperatures of our country. An interesting joint research venture between Indonesian horticulturists and Dutch experts (at Wageningen) showed that standard cut-flower varieties had much shorter stems, but a greater number of thorns, when grown in Indonesia under subtropical conditions (at Cipanas, Indonesia, altitude 1100 m, latitude, 7 degrees S. of the Equator.

All this should not give the impression that warm climate rose breeding is an impossible task. All that has happened is that the big boys have not taken it up – maybe they are doing it in secret!!! It is up to people like us, amateur rose breeders, to show the way.

A separate line of breeding for warm climates is a must. And even though this carries with it the implication of a conscious reversal of western rose breeding , with its natural emphasis on cold hardiness.

The need for such a line was emphasized quite sometime back – in the 1930's – by B.S. Bhattacharji, India's premier rose breeder.

Another way of describing the task is to say that the warm climate rose breeder should attempt to do what David Austin, and now a host of others, have done for the heritage roses of the Western world. New forms of the roses of Asia – the Teas, the Chinas – as well as different Hybrid Teas and shrubs, are the objective.

What are the methods available to evolve better roses for warm climates? Possible strategies for tropical rose breeding include the use of

- a. Heritage roses like 'Archduke Charles', 'Perle d'Or', 'Cécile Brunner', 'Mme Falcot', etc. which do well in warmth.
- b. Selected garden roses like 'Montezuma', 'Maria Callas', 'Peter Frankenfeld' etc., which do well in the warmer parts of the world.
- c. Work with new, unused species with heat resistance. That is, bringing in new genetic input.

Strategies (a) and (b) suffer from the disadvantage that fundamentally no fresh genetic input is involved. As the great Wilhelm Kordes said, 'the soup ladle will bring out only what is in the tureen'.

In addition to bringing in fresh blood it is also essential to remember the importance of the chromosome number and its relation to heat resistance . If we examine the popular warm climate roses from this angle you'll notice that the diploid ones such as the Teas and Chinas do best in the really warm climates. A typical example is the China, 'Archduke Charles', which does well even under the trying warm, humid conditions of Madras city, just 13 degrees North of the Equator. Where the weather becomes sub-tropical, tetraploid roses with the right combination of genes will also do well.

The distribution of rose species also corroborates this, as we find that the diploid species – *bracteata*, *clinophylla* and *gigantea*, with which I am working, *Rosa sempervirens* etc. are endemic to the warmer parts of the world. In the Northern Hemisphere as we proceed north away from the Equator, tetraploid species appear, and the circumpolar *R. asicularis* is octoploid. The pattern is evident.

In the search for better roses I've been working with a very interesting species – *Rosa clinophylla*, probably the only tropical rose species in the world. This species exists in 3 forms, one of which has an astonishing habitat – the islands in the River Ganges, just north of Calcutta. Apart from moist heat this species survives periodic flooding, in fact, the rose spends nearly 6 months of the year under water, with just the tops of the stems showing. The other forms of this species include kinds adapted to hot dry climates as well as to cool desert conditions.

Another species with which I am working is *Rosa gigantea* – the world's largest rose species, which is capable of reaching 50 feet while climbing through forest trees in India's north east. It is also found in Myanmar (Burma) and southern China - the latter variant is the one in the background of the Tea roses.

I will show you some slides which show the various stages of work done with these 2 rose species. Repeat flowering hybrids in modern colours have appeared in both lines. But what is now needed is the testing of these hybrids and their future progeny for adaptation to warmer climates.

(Show slides and describe each one)

(Mention features of *R. gigantea*, especially its habit of flowering in winter, and its ability to produce better cut-flower roses – a feature of great importance for the commercial rose grower.)

We now come to the final part of this talk -- What should we look for in the future. The possible areas of improvement include

- a. Rose plants of various sizes from miniatures to shrubs.
- b. More acceptable plant habit
- c. Disease resistance
- d. Evergreen foliage – thornlessness
- e. Fragrance

And, as far as commercial roses are concerned

- f. Capacity to flower in winter.

In conclusion it should be stressed that it is crucial to improve rose foliage quality and petal texture, which are vital in a warm climate. In the tropical situation, roses have to compete with a host of other ornamentals with lovely foliage, and the rose, when not in flower, comes out distinctly second-best.

Our objective should be to produce roses which look attractive even when not in bloom, as emphasized by authorities like Thomas Rivers (19th century) and Sam McGredy. In other words, roses with shining evergreen foliage.

Here, work with evergreen species is a must. What is encouraging is that almost all evergreen rose species, like *clinophylla*, *gigantea*, *laevigata*, *bracteata*, and *semperflorens*, are natives of the warmer parts of the world and it should be perfectly possible to have rose plants with flowers of the perfect form of the modern hybrid Tea combined with foliage as beautiful as that of *gigantea* and *laevigata*.

I leave you dreaming of this prospect.

Slides for the Talk “Rose Breeding For Warm Climates”

1. R. *clinophylla*, Ranchi form
2. R. *clinophylla* x R. *bracteata*
3. Pink-Pink – (Mrs. B.R.Cant x (Mrs. B.R.Cant x R.*clinophylla*))
4. Bonica x R. *clinophylla*
5. Virmont
6. Landmont
7. (Bonica x R.*clinophylla*) x Silver Moon
8. Charlmont (Mme. Charles Sauvage x Virmont)
9. Landmont x Carmousine
10. Bold 7 x New Zealand
11. Bold Showers x Brandy
12. Mme. Charles Sauvage x Arthur Bell x R. *clinophylla*
13. Arjun x Landmont
14. Landora x Charlmont
15. Bonbright x Ingrid Bergman
16. Delicate Beauty x Virmont
17. R. *gigantea*, fully open
18. R. *gigantea*, fully open
19. R.*gigantea* foliage
20. R. *gigantea* seed pods
21. Rev d'Or x R. *gigantean*
22. Pink Tea x Pink China x R. *gigantean*
23. Marie van Houtte x Echo x R. *gigantea*
24. (Carmousine x R. *gigantea*)II – Cargiant II
25. Cargiant III
26. Athena x R. *gigantea*
27. Chrysler Imperial x R. *gigantea*
28. Carefree Beauty x Cargiant I
29. Brown Velvet x Cargiant I – ‘Brown Giant’
30. Eterna x Brown Giant.
31. Eterna x Brown Giant, bush
32. Red Velvet x Brown Velvet x Cargiant I

- 33. *R. clinophylla* x *R. gigantea*
- 34. *R. clinophylla* x *R. gigantea*, bush
- 35. *R. clinophylla* x *R. gigantea*

Copies of the original

Indian Rose Annual 2003

Rose Breeding for Warm Climates

M.S. Viraraghavan

(This is the text of the talk given at the WRFS Regional Rose Convention, Capetown, South Africa, 28th Oct. - 2nd Nov. 2002.)

A few words on the case for a separate line of breeding for warm climates would be appropriate. In fact, the need for such a line was brought home to me in a somewhat painful manner during the recent severe drought in my farm where I test out my new roses. This farm has a warm dry climate. When the water supply failed and could not be restored for over a fortnight nearly 50% of the Hybrid Teas died, whereas all the Tea roses survived.

All of us are proud that the rose is considered the world's favourite flower. But unfortunately the world we have in mind does not include vast areas of the tropics as well as considerable parts of the warmer sub-tropics where modern roses can only be grown by enthusiasts. You go to a garden loving state like Singapore where there are hundreds of ornamental plants immaculately grown - there is not a single rose there. No wonder "there is scope for breeding new varieties better suited to lowland conditions in Malaysia" (say R.E. Holtum and Ivan Enoch in "Gardening in the Tropics" pg. 83, published by Times Edition, Singapore).

Rose growing with modern roses, even in the warmer parts of the sub-tropics is full of problems. Very few, if any, H.T.'s will thrive in Bermuda. In India, roses become very difficult to grow in the warm moist coastal areas and even in the more favourable conditions in North India and the central plateau, the European raised roses rarely do well. It is mostly the Americans, especially the older AARS winners, which have been evaluated over a range of climates which succeed. The position is much the same in the warmer parts of the U.S. and Australia and, I'm sure, Africa. For South Africa, a clear pointer is the fact that

it is mainly roses raised for greenhouse cultivation in Europe by Kordes which are found suitable for outdoor growing by your own Ludwig Taschner.

Even commercial rose growing for the floriculture industry has similar problems. Standard cut-flower varieties raised in temperate climates have less than optimum yield and flower quality in the higher temperatures of our country. An interesting joint research venture between Indonesian horticulturists and Dutch experts (at Wageningen) showed that standard cut-flower varieties had much shorter stems, but a greater number of thorns, when grown in Indonesia under subtropical conditions (at Cipanas, Indonesia, altitude 1100m., latitude, 7 degrees S. of the Equator.)

All this should not give the impression that warm climate rose breeding is an impossible task. All that has happened is that the big boys have not taken it up - maybe they are doing it in secret!!! It is up to people like us, amateur rose breeders, to show the way.

A separate line of breeding for warm climates is a must. And even though this carries with it the implication of a conscious reversal of western rose breeding, with its natural emphasis on cold hardiness.

The need for such a line was emphasized quite sometime back - in the 1930's - by B.S. Bhattacharji, India's premier rose breeder.

Another way of describing the task is to say that the warm climate rose breeder should attempt to do what David Austin, and now a host of others, have done for the heritage roses of the Western world. New forms of the roses of Asia - the Teas, the Chinas - as well as different Hybrid Teas and shrubs, are the objective.

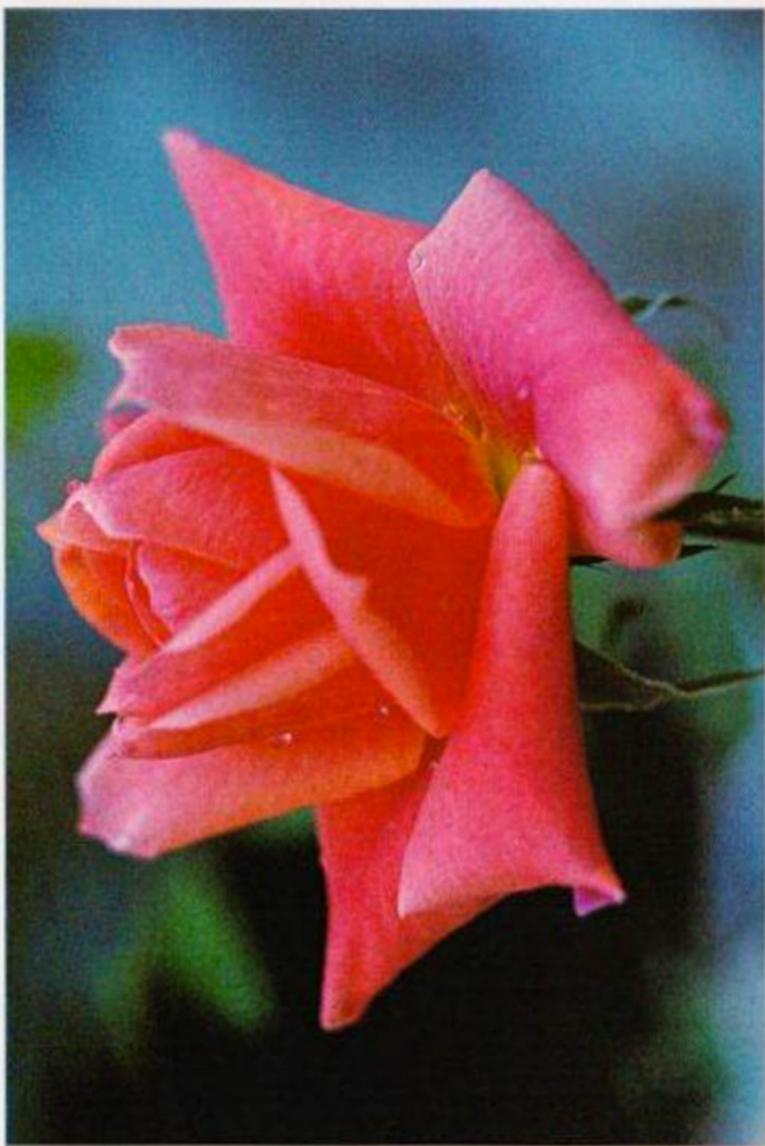
What are the methods available to evolve better roses for warm climates? Possible strategies for tropical rose breeding include the use of

- a. Heritage roses like Archduke Charles, Perle d'Or, Cecile Brunner, M. Falcot, etc. which do well in warmth.
- b. Selected garden roses like Montezuma, Maria Callas, Peter Frankenfeld etc., which do well in the warmer parts of the world.
- c. Work with new, unused species with heat resistance. That is, bringing in new genetic input.



Chryser Imperial x R. Gigantea

Photo Courtesy :- M.S. Viranaghavan



Arjun x R. Chinophylla Seedling

Photo Courtesy : M.S. Viraraghavan

Strategies (a) and (b) suffer from the disadvantage that fundamentally no fresh genetic input is involved. As the great Wilhelm Kordes said, 'the soup ladle will bring out only what is in the tureen'. Expanding on the theme the wellknown authors Roger Phillips and Martyn Rix observe "It is sad that nearly all modern rose breeders concentrate on roses that are hardy; few bother to breed any for subtropical climates and thereby fail to make use of some of the exciting tender species" (Pg. 261, Vol I. Conservatory and Indoor Plants, Macmillan 1997.)

In addition to bringing in fresh blood it is also essential to remember the importance of the chromosome number and its relation to heat resistance. If we examine the popular warm climate roses from this angle you'll notice that the diploid ones such as the Teas and Chinas do best in the really warm climates. A typical example is the China, Archduke Charles, which does well even under the trying warm, humid conditions of Madras city, just 13 degrees North of the Equator. Where the weather becomes sub-tropical, tetraploid roses with the right combination of genes will also do well.

The distribution fo rose species also corroborates this, as we find that the diploid species - *bracteata*, *clinophylla* and *gigantea*, with which I am working, *Rosa sempervirens* etc are endemic to the warmer parts of the world. In the Northern Hemisphere as we proceed north away from the Equator, tetraploid species appear, and the circumpolar *R. asicularis* is octoploid. The pattern is evident.

In the search for better roses I've been working with a very interesting species - *Rosa clinophylla*, probably the only tropical rose species in the world. This species exists in 3 forms, one of which has an astonishing habitat - the islands in the River Ganges, just north of Calcutta. Apart from moist heat, this species survives periodic flooding, in fact, the rose spends nearly 6 months of the year under water, with just the top of the stems showing. The other forms of this species include kinds adapted to hot dry climates as well as to cool desert conditions.

Another species with which I am working is *Rosa gigantea* - the world's largest rose species, which is capable of reaching 50 feet while climbing through forest trees in India's north east. It is also found in Myanmar (Burma) and Southern China - the latter variant is the one in the background of the Tea roses.

Repeat flowering hybrids in modern colours have appeared in both lines. But what is now needed is the testing of these hybrids and their future progeny for adaptation to warmer climates.

R. gigantea's habit of flowering in winter, and its ability to produce better cut-flower roses is a feature of great importance for the commercial rose grower.

We now come to the final part of this talk - What should we look for in the future. The possible areas of improvement include:

- a. Rose plants of various sizes from miniatures to shrubs.
- b. More acceptable plant habit.
- c. Disease resistance.
- d. Evergreen foliage - thornlessness.
- e. Fragrance.

And, as far as commercial roses are concerned,

- f. Capacity to flower in winter.

In conclusion, it should be stressed that it is crucial to improve rose foliage quality and petal texture, which are vital in a warm climate. In the tropical situation, roses have to compete with a host of other ornamentals with lovely foliage, and the rose, when not in flower, comes out distinctly second-best.

Our objective should be to produce roses which look attractive even when not in bloom, as emphasized by authorities like Thomas Rivers (19th century) and Sam McGredy. In other words, roses with shining evergreen foliage.

Here, work with evergreen species is a must. What is encouraging is that almost all evergreen rose species like *clinophylla*, *gigantea*, *laevigata*, *bracteata*, and *semperflorens*, are natives of the warmer parts of the world and it should be perfectly possible to have rose plants with flowers of the perfect form of the modern hybrid Tea combined with foliage as beautiful as that of *gigantea* and *laevigata*.

I leave you dreaming of this prospect.